

SERVICE MANUAL

TIME OUT / CARRIER RESET



MODEL MA-303

SERVICE INSTRUCTIONS

REGENCY MA 303

TIME-OUT CARRIER RESET OPTION

A. General Description

The MA 303 is designed to automatically reset the MA 123 Two-Tone Sequential Decoder, the MA 301 Two-Tone Sequential Decoder and the MA 147 2805 Tone Decoder using either an RC time-out circuit or an end of message detection circuit (carrier reset). The MA 303 leaves the message light on to alert the user that he has received a message.

The MA 303 is an interface between the aforementioned options and the entire MICRO COM line of radios. The installation instructions in this manual take precedence over the installation instructions of all the decoder options.

B. Circuit Description

1. **Carrier Reset:** This circuit uses the alert line from the decoder and K9 the squelch switch control line in the radio. To describe generally what happens the radio is held in a squelched state by the decoder option either by a high on K7 or a low on K9 depending on which option is used. When the proper code is received K9 goes high. Upon completion of the message, the carrier is removed and the squelch switch causes K9 to go low. This transition of K9 grounds C901 through diode CR905 causing a large negative going spike at Pin 13 of IC902. This, in turn, causes the MA 303 K5' to go high long enough to reset the option so that it is ready to receive the next message.
2. **Time-Out Reset:** This option uses an adjustable RC time constant and a voltage comparator to keep the radio receiver unsquelched for a user selected amount of time to monitor radio traffic after an alert has been received.

When DØ goes low Q902 drains the charge from C902 through R903 and R905 thus lowering the voltage on Pin 3 IC901. When this voltage is equal to the voltage on Pin 2 which is set by the divider network R914, R901 and R912 the output at Pin 1 goes low causing IC902 to reset the decoder.

When DØ goes high C903 is recharged through CR901 and the reference voltage on the comparator is increased by removing the bias from CR902. This prevents regenerative oscillations in the reset circuit.

The MA 303 DØ K5 interface with the radio is controlled by a Nand gate logic circuit consisting of IC902A,B and C (see Figure 1).

C. Installation and Adjustment Instructions

Install the jumpers as indicated by the appropriate figure. Any additional jumpers for other options should be installed as per the instructions for that option.

Install the time-out carrier reset jumper according to the schematic.

The MA 303 requires only one adjustment in the time-out mode. R903 must be adjusted to whatever length of reset time the user deems appropriate for his application.

D. Specifications

Voltage	8VDC
Current	9ma
Inputs	
D0	.7VDC - 6.4VDC
K9	0VDC - 7.7VDC
K5	0VDC - 8VDC
D0	.3VDC - 8VDC

Outputs

K5	0VDC - 8VDC
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TROUBLE SHOOTING CHART	OPTION D Ø PIN 1	RADIO D Ø PIN 3,5	PIN 6,10,12	PIN 4,2	OPTION K 5 PIN 11	EITHER RESET PIN 13	MIC HANG-UP PIN 8,9
INITIAL CONDITION	H	L	H	H	L	H	L
ALERT RECEIVED	L	H	H	L	L	H	L
MICROPHONE RESET	L/H ↑	H/L ↓ *	L	H	H	L	H

* WHEN RESET IS ACCOMPLISHED VIA CARRIER OR TIME OUT, IN PLACE OF THE MICROPHONE THIS STATE REMAINS HIGH AND THE MESSAGE LIGHT STAYS ON.

FIG. 1

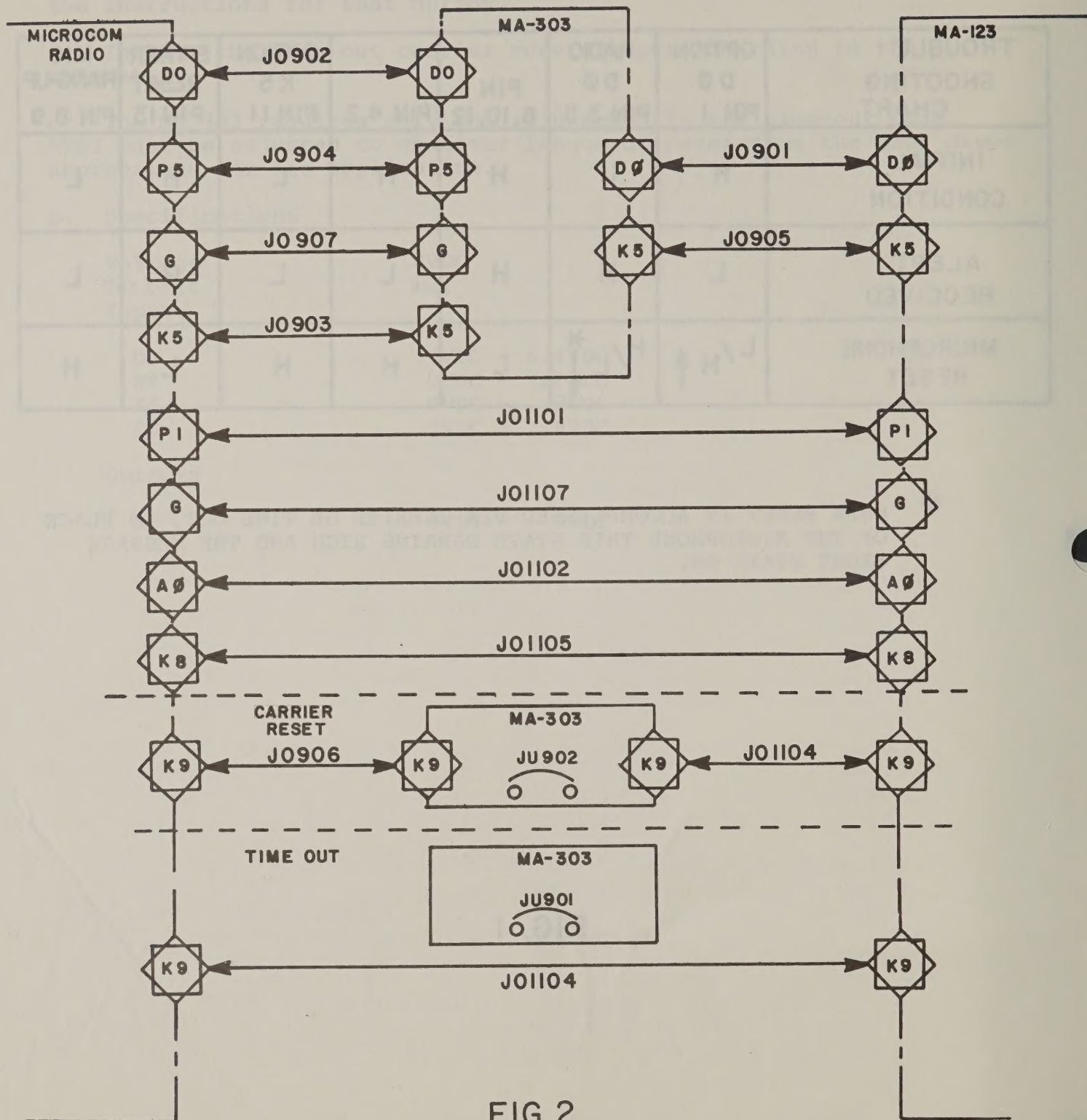


FIG.2

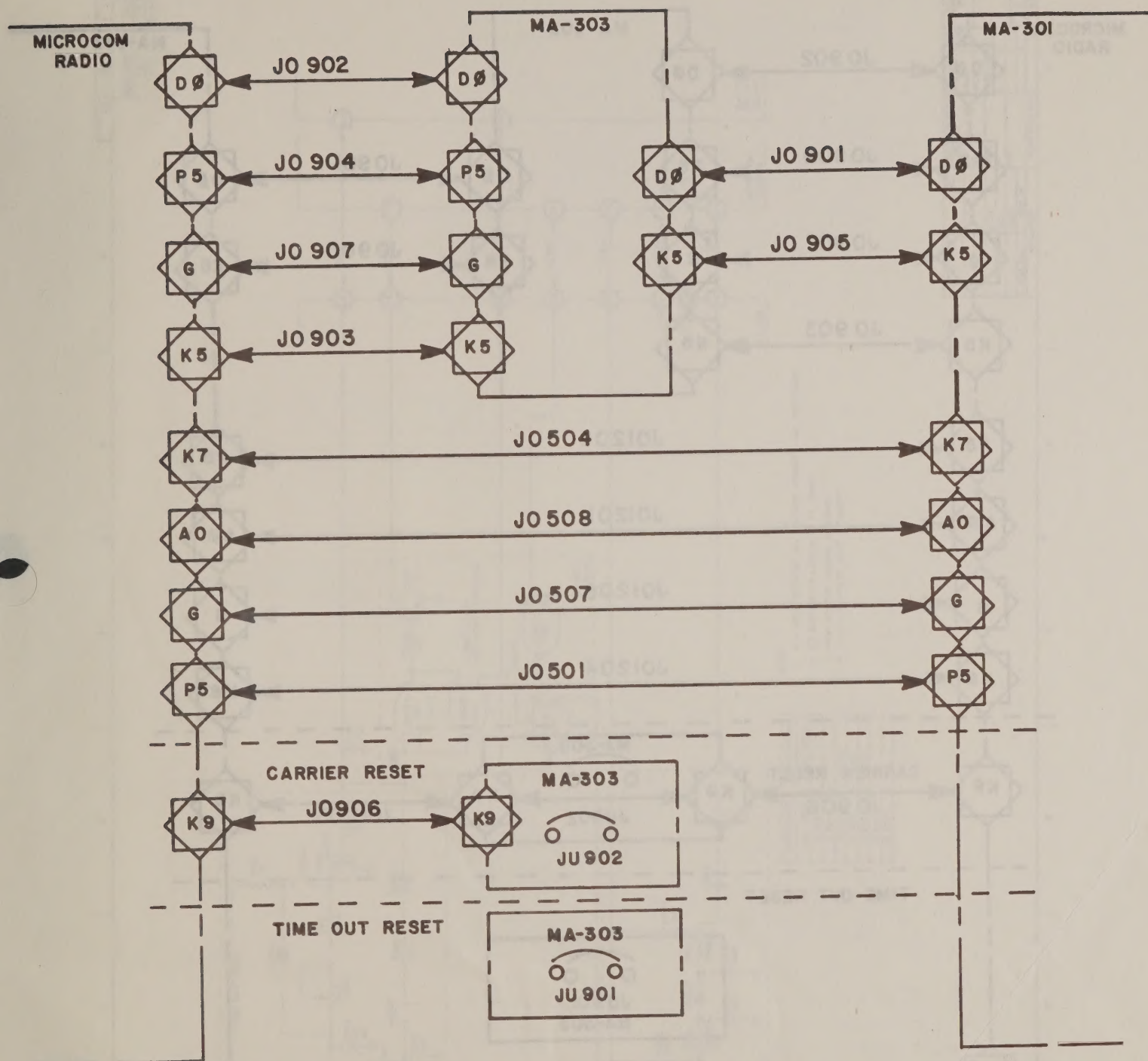


FIG. 3

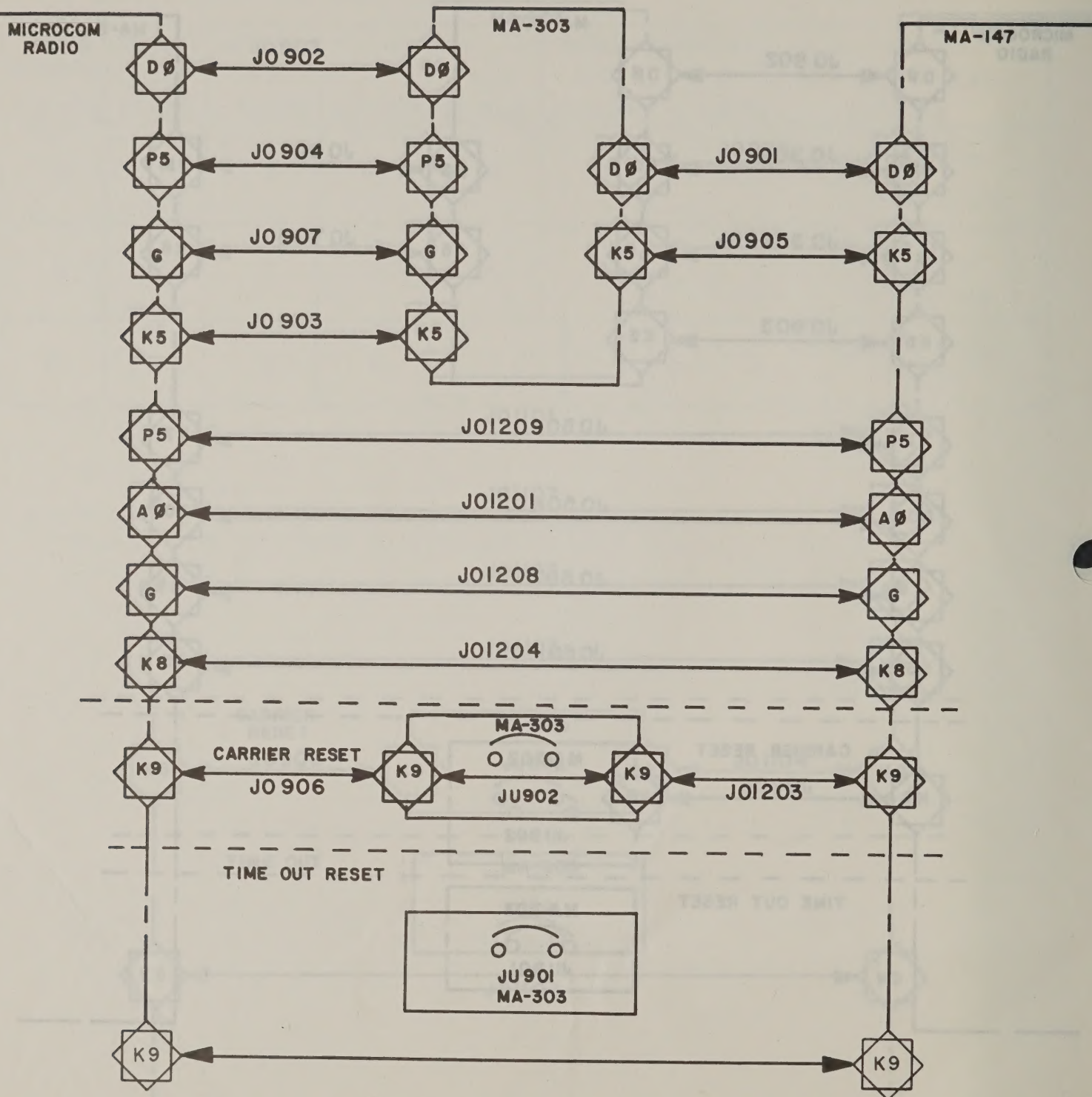
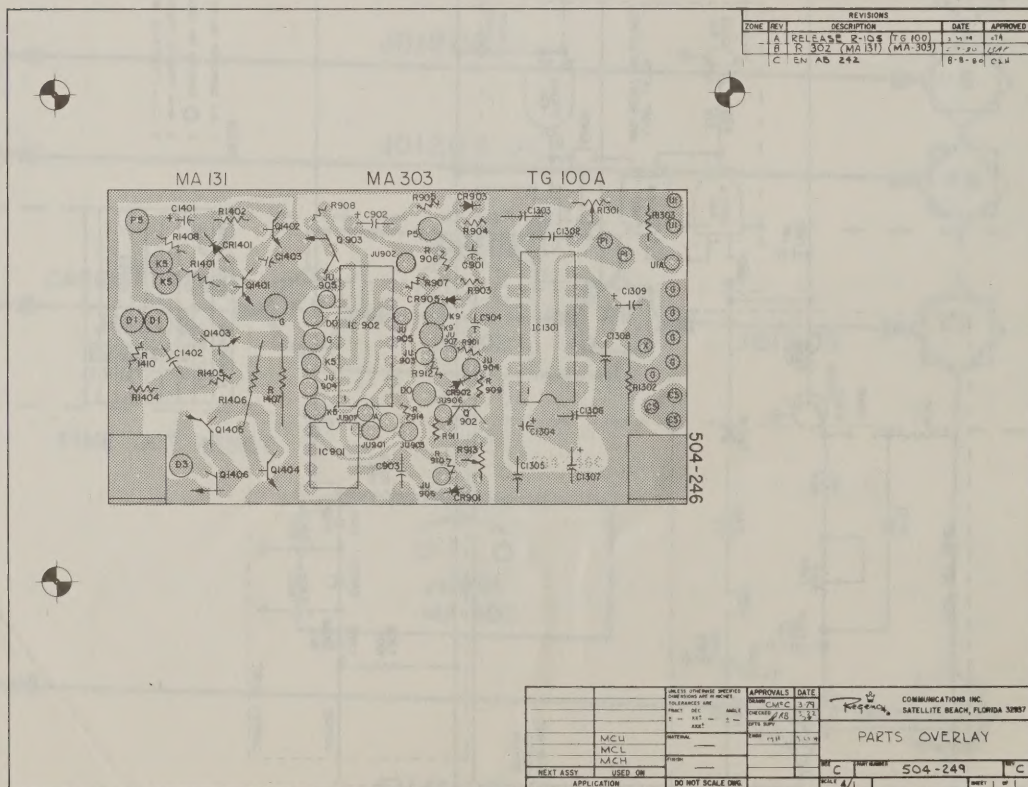
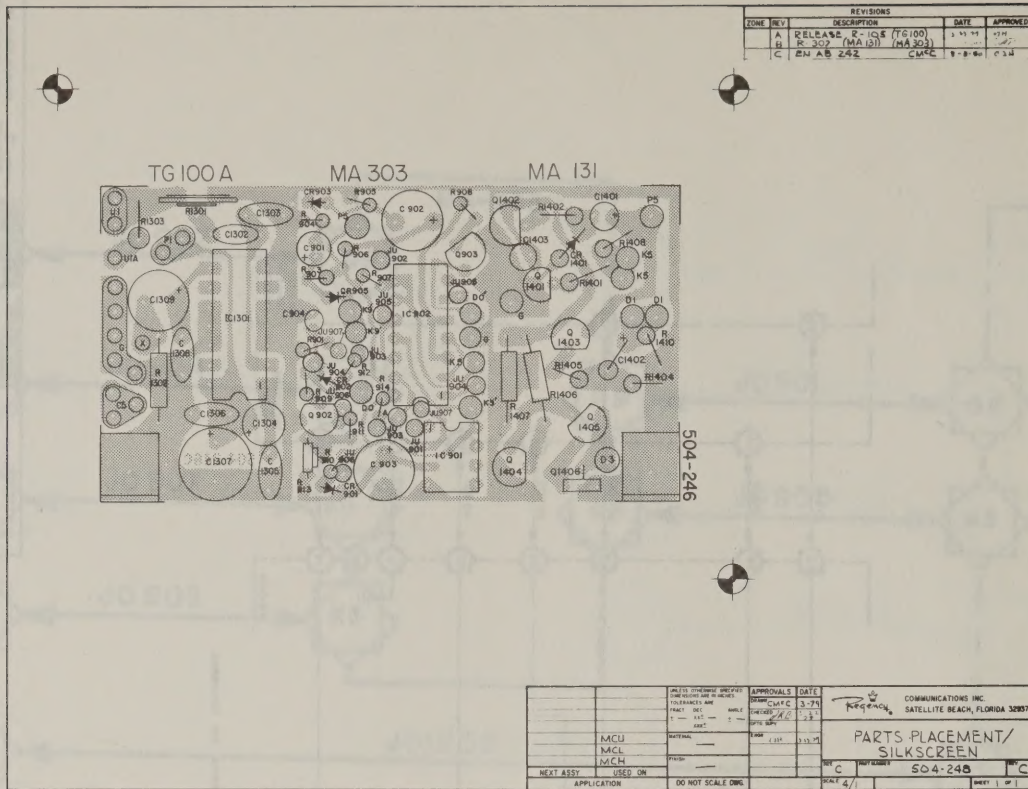


FIG. 4



PARTS LIST

MA-303

<u>LOCATION</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>
<u>CAPACITORS</u>		
C901	10mf tant	1515-0100-005
C902	220mf 16V elect	1513-0221-002
C903	100mf elect	1513-0101-002
C904	.1mf CD +8-2 50V	1503-0104-010
<u>INTEGRATED CIRCUITS</u>		
IC901	LM358N	3130-3167-909
IC902	CD4011AE	3130-3157-628
<u>RESISTORS</u>		
R901	10K	4704-0103-032
R902	10K	4704-0103-032
R903	10K	4704-0103-032
R904	100K	4704-0104-032
R905	1M	4704-0105-032
R906	100K	4704-0104-032
R907	1M	4704-0105-032
R908	22K	4704-0223-032
R909	10K	4704-0103-032
R910	1K	4704-0102-032
R911	150K	4704-0154-032
R912	1K	4704-0102-032
R913	1M Mepco	4751-0105-002
R914	10K	4704-0103-032
<u>TRANSISTORS</u>		
Q901	not used	
Q902	2N5087	4801-0000-036
Q903	B.T.	4801-0000-003
<u>DIODES</u>		
CR901	IN4148	4805-1241-200
CR902	IN4148	4805-1241-200
CR903	IN4148	4805-1241-200
CR904	not used	
CR905	IN4148	4805-1241-200

PARTS LIST

NA-303

LOCATION	DESCRIPTION	PART NUMBER
DATA		
1001	1001-0100-002	1001-0100-002
1002	1002-0100-002	1002-0100-002
1003	1003-0100-002	1003-0100-002
1004	1004-0100-002	1004-0100-002
INTEGRATED		
CIRCUITS		
1001	1001-0100-002	1001-0100-002
1002	1002-0100-002	1002-0100-002
RESISTORS		
1001	1001-0100-002	1001-0100-002
1002	1002-0100-002	1002-0100-002
1003	1003-0100-002	1003-0100-002
1004	1004-0100-002	1004-0100-002
1005	1005-0100-002	1005-0100-002
1006	1006-0100-002	1006-0100-002
1007	1007-0100-002	1007-0100-002
1008	1008-0100-002	1008-0100-002
1009	1009-0100-002	1009-0100-002
1010	1010-0100-002	1010-0100-002
1011	1011-0100-002	1011-0100-002
1012	1012-0100-002	1012-0100-002
1013	1013-0100-002	1013-0100-002
1014	1014-0100-002	1014-0100-002
1015	1015-0100-002	1015-0100-002
1016	1016-0100-002	1016-0100-002
1017	1017-0100-002	1017-0100-002
1018	1018-0100-002	1018-0100-002
1019	1019-0100-002	1019-0100-002
1020	1020-0100-002	1020-0100-002
TRANSISTORS		
1001	1001-0100-002	1001-0100-002
1002	1002-0100-002	1002-0100-002
1003	1003-0100-002	1003-0100-002
1004	1004-0100-002	1004-0100-002
1005	1005-0100-002	1005-0100-002
1006	1006-0100-002	1006-0100-002
1007	1007-0100-002	1007-0100-002
1008	1008-0100-002	1008-0100-002
1009	1009-0100-002	1009-0100-002
1010	1010-0100-002	1010-0100-002
1011	1011-0100-002	1011-0100-002
1012	1012-0100-002	1012-0100-002
1013	1013-0100-002	1013-0100-002
1014	1014-0100-002	1014-0100-002
1015	1015-0100-002	1015-0100-002
1016	1016-0100-002	1016-0100-002
1017	1017-0100-002	1017-0100-002
1018	1018-0100-002	1018-0100-002
1019	1019-0100-002	1019-0100-002
1020	1020-0100-002	1020-0100-002